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GENESEE FARMER.

SATURDAY, MARCH 25, 1837.

Short Directions for Planting Garden Vegetables.

The first thing to be done in gardening is to prepare the ground. It is necessary that a garden soil be deep and loose, that the roots of vegetables may penetrate it, spread and imbibe nourishment. Depth of soil also prevents drouth by its capability of containing and consequently retaining a greater quantity of moisture than a shallow soil, and it prevents drowning by being capable of holding more water without being flooded.

Where not already done, manure should be now drawn upon the ground intended for gardening, to be intermixed with the soil by deep and thorough ploughing. Where manure fresh from the stable is brought, and cannot be spread and ploughed under immediately, it should be piled in a heap, and then covered with soil 3 or 4 inches thick, and this with a coating of lime, in order to retain the exhalations during fermenting which otherwise would pass into the air, and carry off a large portion of the best quality of the manure. If earth cannot be had at this season, in consequence of the ground being frozen, a greater quantity of lime must be applied; or ashes may be first spread over, as a substitute for earth. In addition to the lime thus preventing the waste of manure, its usefulness to the soil after it is spread upon it, will far overbalance its cost.

As a deep soil cannot always be had at once, the defect may be partially remedied by throwing the soil into ridges upon which the crop is to be planted. Of course in these ridges there will be an accumulation of loose and rich earth. But it is much better to have a soil so deep and well manured as not to need this expedient.

Most garden crops are sown in drills or small furrows drawn with a hoe or stick; and where it is stated in directions that seeds are to be planted in drills of any described depth, it is to be understood that they are actually buried only about one half that depth, as the earth is taken from the sides of the drill for covering. A convenient way of sowing some garden crops in drills, is to lay a board across the prepared bed, draw a stick to form the drill along the edge of this board, drop the seed and cover it, and then move the board forward, placing it upon the planted drill, and proceed with another as before. This forms them straight, and by standing during the operation upon the board, it presses the soil firmly about the newly planted seeds and consequently assists their vegetation. Another and more rapid mode of forming drills is to make a tool like a rake head, but much larger, so that each tooth, when it is drawn through the soil, may form a drill, at the required distance from the others.

Rolling is advantageous wherever the ground is not so wet or adhesive as to be injured by the operation. It presses the fresh earth about the seeds, and keeps them moist until they germinate. When a roller is not at hand a substitute may be obtained by laying a plank or board upon the newly sown bed, and then walking upon it lengthwise. Nothing, perhaps, protects turneps, and other plants which are injured by the turnep fly, from its depredations, so much as rolling. By pressing down the soil and rendering the surface smooth, it destroys their hiding places. Such seeds sprout soon, and they are sometimes destroyed by insects even before they reach the surface, in which case the seedsman is sometimes unjustly blamed. Seeds sown in ground inclining to be dry, need watering, especially if they are enveloped in a dry shell. Among those which most require a moist soil or watering, are lettuce, onions, parsnep, parsley, asparagus, capsicums, celery, rhubarb, salsify and spinage.

With these preliminary remarks we now proceed to give particular directions for planting each vegetable of the most common kinds.

Cabbage. The early kinds may be sown in hot beds, in the latter part of March, and in a few weeks they will be fit to transplant in the open ground. Or, they may be sown a little later in a warm border under the south side of a board fence. Red cabbage may be sown early in May, and Savoys and the large winter drumhead, almost any time during the month. Cabbages should be transplanted into very rich ground, for this general rule applies particularly to them, that all vegetables where the growth of leaf and stalk is the chief object, are greatly benefitted by copious manuring. When transplanted, the small early cabbage, as the early sugarloaf and the early York, should stand about two feet apart, and those larger a greater distance according to their size, the large winter drumhead, for instance, should be at least three feet.

Broccoli. The Purple Cape is the only variety we would recommend for common culture; those who wish to raise the other kinds must consult books on gardening, as they require care and minute directions. The Purple Cape should be sown about the middle of May, and when of suitable size should be transplanted in uncommonly rich ground, and they will produce fine heads early in autumn.

Cauliflower. This requires more care than the last; it commonly succeeds best when sown early in fall and transplanted into beds which are protected from the winter by frames, and sash, and mats. It succeeds well, however, if sown very early in a hot bed, and afterwards transplanted, as the plants become larger, into a later hot bed, and finally into open ground in the latter part of April. These if well managed will produce heads in June. If sown early in May, cauliflowers may be treated the same way as Purple Cape Broccoli, and with nearly the same success.

Kale and *Brussels Sprouts* may be sown about the middle of May and transplanted early in July in rich ground. They are used as greens, and are best after having been touched with sharp autumnal frosts.

Asparagus. The seeds should be sown early in spring in the best ground in the garden, in drills about one foot apart. They may be transplanted into beds when a year old. They will not, however, produce good shoots for use in less than three years. An asparagus bed properly prepared, will continue to afford crops for twenty years or more. New beds are made by transplanting, thus: dig the ground eighteen inches or two feet deep in the form of a broad trench, fill this trench with alternate layers of soil and manure, until near the top, when the whole should be covered with a few inches of rich mould, in which the roots should be planted, with the crowns about three inches below the surface, and about one foot apart. Or, the bed may be sown with seed at once, and the plants afterwards thinned. Old beds should be cleaned off early in spring before the plants start, and then covered two or three inches with rotted manure, which should be dug in with a fork, taking care not to injure the plants.

Globe Artichoke may be raised from seed or from young suckers taken off in spring. The seed should be planted in drills about one inch deep and about one foot apart. When the plants are a foot high, they are to be transplanted into ground trenched eighteen inches deep and mixed with manure, the plants standing about three feet apart, or three by five feet according to Bridgman.

Peas. The early varieties should be sown as early as possible in the spring. Double rows are the most convenient, and these double rows should be about a foot apart, and a space of from four to six feet, according to the height of the peas, between these double rows. Peas should be sown about two inches deep, and two or three inces asunder in the rows.

Beans. English beans should be planted so early that they may produce their crop before the heat of summer; the seed should therefore be put in the ground on the earliest opening of spring. A clayey loam is best, but a lighter soil is good if they are well rolled. The drills should be about two inches deep and two or three feet apart, and the seed two or three inches in the drill. The Mazagan and Lisbon are the earliest, and the Genoa best for late crops. The Windsor, the Sandwich, and the broad Spanish are excellent.

The kidney or common bush and pole beans, require a light rich soil, and may be planted in hills, three or four seeds to a hill, or in drills two or three feet apart, and two or three inches in the drill. As kidney beans are tender and easily injured by frost, the planting should be delayed until settled warm weather, which brings them forward rapidly. Pole beans require the same treatment as bush beans, except the addition of poles.

Cucumbers, melons, and *squashes,* should be planted about the first of May, in highly manured ground, or in copiously manured hills, about four feet apart. In clayey ground it is indispensable to success to plant them on ridges of manure, covered several inches with earth; these ridges should be at least a foot high, and they will produce twenty times the amount of crop that is obtained the common way. As soon as they are up a person should go over them three times a day, and pinch to death with his thumb and fore finger all striped bugs which can be found upon them, and continue this operation until the plants are beyond their reach. The best Cucumbers are the Early Green Cluster, and the Long Green Prickley. The green fleshed Nutmeg melon is most excellent for eating.

Carrots require a deep rich sandy loam. They may be sown in drills a foot or eighteen inches apart, and six or eight inches distant in the drills. The Early Horn is the earliest, and the Long Orange the best for main crops.

Beets. Those intended for early crops should be sown as soon as the ground is open, and main crops deferred till warm weather in May. They need a deep soil and plenty of manure, and may be sown in drills one foot apart and one or two inches deep, about three inches apart in the drills, afterwards to be thinned to about eight inches. Among some of the best for eating are the Sugar and Red Turneprooted.

Parsneps should be planted as early as possible, in drills, like beets, and in common with all root crops require a well manured soil.

Parsley should be sown early in drills one foot apart and one inch deep.

Salsify or vegetable oyster, requires the same treatment as carrots and parsneps.

Onions may be sown about the middle of April, and buried half an inch deep in drills twelve inches apart. When of suitable size they are to be thinned to a distance of two or three inches in the drill. One of the best varieties is the Silver-skinned; the Strasburg is good for a general crop.

Lettuce may be sown as early as is desired, either in a hot bed, or in open ground.

Egg plant, may be sown in a hot bed, the sash to be closed to keep in the heat until it is up. In the middle or at the end of May, the plants are to be set out two feet apart in good garden soil. If transplanted too early it will be hurt by frost.

Celery should be sown as soon as spring opens, in drills half an inch deep, and afterwards transplanted in open ground in proper trenches for earthing.

Sea Kale requires a deep rich sandy loam, as the roots penetrate to a great depth, and should be sown as early in the spring as the state of the ground will admit, in drills, an inch and a half deep, twelve or fifteen inches apart, and six or eight inches in the drill. When a year old they are to be transplanted more than a foot apart, and

blanched by covering them early with sand, gravel, or what is much better, inverted pots. Three or four weeks are required for the blanching.

Tomatoes are best raised by sowing them in hot beds, and afterwards transplanting them into open ground. If the soil is rich, they should stand when transplanted, at a distance of at least two or three feet from each other.

We intend to give further directions relative to the subsequent culture of garden vegetables, at a seasonable day.

Birds of Passage.

The migration of birds, furnishes one of the most wonderful proofs of the instinctive powers of that part of animated nature, and does more perhaps than any thing else, to make us acquainted with their different varieties, and their habits. Now and then an entire new kind is met with among these wanderers, and oftener those that are natives of other climates and regions are in this way submitted to our observation. There are many birds that follow in the wake of civilization; the introduction and spread of the cereal plants, the culture of new and various flowers, and even the spread of some kinds of weeds, has been found to invite these denizens of the air to call in their passage from the tropics to the north, or even to make their residence where they once were unknown.

Last November we observed a new, or very rare bird, one, so far as can be learned, which had never visited this section of country before, and which was evidently a bird of passage. They made their appearance in small flocks, or rather families of some ten or fifteen, remained a few days and then disappeared. Their unusual note, as well as singular appearance, attracted much notice, and as they were fearless, and evidently unaccustomed to the society of man, there was no difficulty in killing or taking them for observation. Our copy of Nuttall's Ornithology happened to be not at hand, and we had no opportunity of verifying the species by comparison; but on examination since, it resembles with few exceptions the description given of the Pine Grosbeak, or *Loxia enucleator* of Wilson. "Sp. charact. Wings with two white bands, and the tail black; secondaries edged with white; length about 9 inches. Adult male tinged with reddish orange; beneath inclined more to yellow. In the young male the same parts and the rump are carmine of different shades. Female, with the top of the head and rump brown orange; below cinerous, with a faint tinge of orange. Tail considerably forked. Legs black. Bill brownish horn color." The male birds we examined were highly colored with the carmine or red orange, the tail quite forked, the bill black, broad at the base and tip curved, and length about 9 inches. In the flocks were some without the carmine tinge, and of a hue a little inclining to olivaceous. Nuttall says, "the Pine Grosbeak appears to dwell almost wholly within the cold and arctic regions of both continents, from whence only, in severe winters, a few migrate into Canada and the U. States, where they are of rare and uncertain appearance. They are common in the pine forests of Siberia, Lapland, and the N. W. coast of America. The American birds of this species are observed to return to Hudson's Bay as early as April."

The chosen country of its residence will account for its scarcity with us. Will the violent snow storms of the first of October, which appear to have extended over the most of the continent, as satisfactorily explain its appearance with us? Its singular almost metalliferous luster was well calculated to arrest attention, and several sportsmen have spoken of it as a bird which they had never before seen. Its habits were perfectly inoffensive, living principally in sheltered orchards, and subsisting on seeds.

ITEMS.

City of Atzalan.—The last Milwaukie Advertiser contains a Diagram of an ancient city situated on Rock River, which Judge Hyer, the describer, denominates Atzalan. It is directly west of Milwaukie, in the town and county of Jefferson, and of rhomboidal form, and instead of being as was supposed, a walled city, appears to have been a military fortress. The walls were of a species of brick, and enclosed about twenty acres of land. About the center of the wall fronting the river was found an arched sewer of stone in a state of tolerable preservation. There can be no doubt but these remains are the work of a people whom Indian tradition says once inhabited a portion of Mexico, and who were cut off by the less civilized but more warlike tribes from the North.

Safety of Rail Roads.—The last annual report of the Worcester Rail Road, says, that since the first opening of the road, nearly three years since, there have been transported on the road nearly 300,000 passengers; and that during the whole period no passenger on the road has by any accident or negligence, sustained any personal injury.

Carrier Pigeons.—A gentlemen belonging to New Orleans has lately imported into that city thirteen brace of Carrier Pigeons, and intends to use them between New Orleans and Mobile.

Safe Seal.—A letter closed with the white of an egg cannot be opened by the steam of boiling water, like a common wafer, as the heat only adds to its firmness.

Wool in New England.—The number of sheep in Vermont is 1,009,911, New Hampshire 465,179, Connecticut 300,000, estimated in New York 500,000 —in all 6,775,089. Estimating the fleece of each sheep at three pounds, the annual product of wool in these four States would be 20,325,270 pounds, which at sixty cents per pound would amout to $12,195,162.

From the Baltimore Farmer.

Spring Crops—Corn.

This grain, as we all know, is, when well cultivated, capable of yielding more grain to the acre—more farinaceous material—than any other, and such is its peculiar aptitude to accomodate itself either to the long summers of our more southern region, or the short ones of the east, that varieties which take all the fructifying influence of the former to ripen their kernels, when translated to the latter, so accommodate themselves to the more brief duration of summer in that quarter, as to perform all its work of maturing before the autumnal frosts. But with all its excellent qualities of *nutrition*, *productiveness*, and *acclimation*, there is no crop more uncertain or precarious: there is none which better rewards high and neat cultivation, or punishes with more severity, he who tampers with its growth in a slovenly manner, on soil despoiled of its virgin strength, and when niggerly denied assistance by the besotted being, whose cupidity and ignorance, has made him at once as reckless of his own permanent intetest, as of the necessities of the earth, whence he would impiously draw his sustenance. We say it is an uncertain and precarious crop, and so it is:—while *Earl Stimson*, of New York, that prince of corn-growers, will *average* upwards of 100 bushels to the acre in a crop of 5,000 bushels, we could point to those who do not, in many instances, make over two barrels to the acre. Perhaps these gentlemen would say, "Ah, but Mr. Stimson's land is very rich, and then he manures highly." Not so:—naturally, the soil of Mr. S's. farm is very poor, being 54 per cent. of pure silex, and only 3 of the carbonate of lime; and so far from his manuring highly, he does not give more than an ordinary portion of manures. He "manures his land only *once in six years*, excepting the *application of plaster* to his corn. He allows five loads of barn yarn manure, and three of leached ashes, to an acre, and this is always spread upon the surface after ploughing for the first crop, and either harrowed or ploughed in by a very light ploughing. In ploughing he never permits the plough to go deeper than three inches; the sod is turned over flat, and then rolled, it being his great object to keep all the vegetable matter on the surface." With this moderate supply of the wants of his soil, for ten years prior to 1832, his crops of corn ranging above 5,000 bushels anually, have averaged the product stated, viz. over 100 bushels to the acre. We have not exhibited this *plan* of Mr. Stimson because it meets our entire approbation; for there are parts of it to which we would object, and yet the *result* of his labors, the safest mode of arriving at truth, would tell us that his *plan* is just suited to his light sandy soil. If left to our own judgment, we would go deeper; tho' we had to use the *substratum plough*, we would find a highway for the larger roots of the corn to draw their liquid cordial from the bosom of the earth.

The great art, in Mr. Stimson's case, consists in doing every thing at the right time; he never permits his corn to suffer in consequence of weeds, or a baked and parched earth—the weeds before they can possibly operate injuriously are expelled, and the earth is always kept loose and fresh around the plants, attracting moisture from the atmosphere, and drinking in the sweet and animating dews as they fall; thus preserving to the growing corn a continuous supply of wholesome, refreshing and digestive aliment. We should mention here, cursorily, that his corn rows are but 27 inches apart, that he plants the small northern cern, and *leaves* 4 plants in each hill, so that each acre in culture by him contains 30,300 plants.

The stating of this latter fact, points to us a *moral*, which we could wish our readers generally, and particularly those in the middle, southern and western states to pay particular attention to, as we desire that they should profit by it. It is an undeniable fact, that all *very large products of corn* have been the result of close planting. In this fact, their greater assiduity and neatness in its culture, and the application of proper manures, are we to find the true causes why the eastern farmers so far excel us in the product of this indispensable grain. While most of us have our rows ranging from 6 to 5½ feet, with but 2 plants in a hill, the more economical Yankee places his rows at from 27 inches to 3 feet, and instead of having 2 plants at each point, there are 4. Now let us see what an immense difference in product is thus brought about. Rows 27 inches either way apart, 4 plants in a hill, as we have before shown, give us 30,300 plants: Rows 5 feet either way, 2 plants in a hill, give us but 1742 hills or 3484 plants:—while the *first*, yielding a gill of shelled corn for each stalk is competent to grow 118 bushels, 8 quarts, to the acre, the *latter* at the same ratio of yield, can only give the product of 13 bushels 16 qts.; or supposing the *ears* on the wide planted corn, should produce 3 times as much as that planted close, or 3 gills to the stalk, how stands the account then? Why 38 bushels 18 quarts is the product; and, indeed, if it should average a pint to the stalk, still its yield is far, very far, behind that of the *closely* planted corn; for in that event, it would reach but 54 bushels; being less than 50 per cent., of the product of the other.

We know that it will be alleged by those who have trodden in paths rendered venerable and venerated by their antiquity, and peculiar associations, that our soil will not bear such *close planting*; neither would that of Mr. Stimson, nor that of any other northern or eastern gentleman do so, if they did not in a spirit of *justice*, occasionally *return* something to the earth to comfort its bowels, and compensate it for its givings out: and surely there is no corn-planter this side the Hudson, that could not once in 6 years afford to give in the proportion per acre of 5 loads of barn yard manure and 3 of leached ashes, or their equivalents. According to Mr. *Stimson's* rotation of crops, and plan of improvement, his *corn crop* gets no manure whatever, except plaster on the hill. His *rotation* is:—

1. Wheat—manured.
2. Corn—plastered.
3. Flax, Rye or Barley.
4. } Clover and Herds' grass.
5. }
6. Pasture.

If by a little attention we can make 1 acre produce us what it heretofore took 4 or 5 to do, surely upon the score of economy we are bound to adopt that plan if it be not too costly; and as *close* planting is no otherwise more costly than the *wide*, except in the *extra quantity* of seed, we affirm unhesitatingly that no one should hesitate to make the proper experiment. "Ah! but if you plant too close, it will *fire* the corn." It will do no such thing; it used to be a dogma among planters, that, if ground were stirred in a *dry spell* it would *burn up* every vestige of the growing vegetables; but this absurd dictum of other days, has lost many of

its worshippers: experience, common sense, and human reason, have all combined to ferret it out of the affections of many of those who once received it as oracular.

Let us hear what one of the best farmers in our country says upon this part of the subject.

In the Massachusetts Agr. Rep. John Lowell advances these clear and conclusive remarks:

"In this extraordinary [very dry] season, I had a small patch of early potatoes, planted in a warm and sandy soil, purposely to procure an early crop; the soil was at least three quarters pure sand, mixed with some food for plants among the sand. The severe drouth threatened a total loss of the crop. The potatoe stalks were feeble, drawn up scarcely larger than goose-quills, and I expected every day to see them wither; all hopes of a crop were abandoned. I thought they were the fair subjects of a *desperate experiment*. On one of the hottest and driest days, I gave them a thorough ploughing, passing the plough four times through each row; first ploughing two furrows from the hills, as near the roots as possible, without throwing out the seed potoes, and then returning the loam or earth instantly back by two other furrows. No rain intervened for ten days. In three days after the potatoes changed their color, they started afresh, as if they had received the benefit of ample showers, while not a drop had fallen. The dews, which were abundant, settled upon the new turned earth, while before the ploughing no moisture had been apparent."

This solitary fact speaks volumes, and will go far to reconcile practical men to leave the *shadow* for the *substance*.

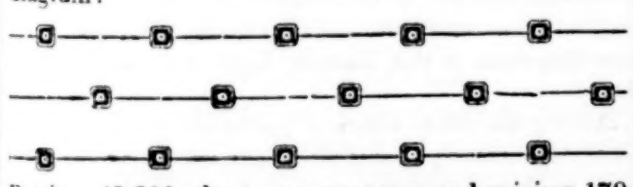
Having quoted the success of Mr. Stimson in evidence of the efficacy of close planting, we will sustain the propriety of his system by showing that several others have produced *large crops* by the same means:

Mr. Stevens, of New Jersey, near New York, averaged on 3 acres, upon each of which he placed 26,880 plants, 118 bushels of corn per acre; the distance about 5 feet one way by 8 inches in the drill.

Mr. Ludlow, of New York, raised on 3 acres at the rate of 98 bushels to the acre—his rows were 4 feet, the plants 8 inches asunder.

Mr. Lorain, of Pa. raised 91 bushels to the acre: his plan was double rows 8¼ feet wide, the number of plants 20,000.

Messrs. Pratts of Madison county, New York, obtained 170 bushels per acre; they used 7 bushels of seed to the acre, the plants being subsequently reduced to the requisite number. They grew this prodigious crop 3 rows in a drill, 3 feet from centers of drills, as is represented in the following diagram:



Putting 43,560 plants on an acre, and raising 170 bushels and 4 quarts.

Judge Buel on a small scale raised at the *rate* of 118 bushels 10 quarts per acre.

We might enumerate numerous other persons, but will refrain from doing so, and shall content ourself with having proved the fact, that the large products are the result of close planting. We shall annex a table which will be instructive, so far as to demonstrate the certainty of a heavy yield by means of *close* and good culture, and the improbability of any *immense* results when left to the auspices of the wide culture.

These tables it will be seen, contain estimates serverally ranging at 1, 1½, 2, and 3 gills of shelled corn per stalk. So far as the close planting is concerned, as the ears of the northern corn are small, we deem it prudent to say, that their yield *per ear* will scarcely ever exceed 1½ gills, though they may sometimes reach 2 gills—the calculations, therefore, in the *two last columns*, are filled up more for form sake than any thing else, except for the produce of wide planting. The large eared corn mostly grown on *wide* rows, at *wide* distances, would be likely to furnish ears having 3 gills or more of shelled corn on them. Indeed we have seen 4 gills shelled off of a single ear. For the accommodation of such ears, we made our two last columns, and therefore consider this explanation necessary.

We ask all our readers to examine the table we have made out with care. If they do so, they will perceive that under very rare circumstances of singular good fortune, corn planted 5, 4½, or 4 feet apart either way, with two stalks in the hill, can scarcely ever exceeded 40 or 50 bushels to the acre; that the number of stalks requisite to large yields is wanting; but that by close planting, proper manuring, and culture, above a hundred bushels to the acre may be grown, allowing to each stalk only the capacity of bearing 1 gill of corn.

With these explanations and remarks, we subjoin the table, and bespeak for it all proper attention.

No. of various methods.	Distance of rows apart.	Distance of plants apart in the rows or drills.	No. of plants in a drill.	No. of hills in an acre.	No. of plants on an acre.	Product of an acre at 1 gill of shelled corn per stalk.	Product of an acre at 1½ gill of shelled corn per stalk	Product of an acre at 2 gills of shelled corn per stalk	Product of an acre at 3 gills of shelled corn per stalk
1	2½ by 2½	27 inches	4	7,575	30,300	18 bush. 8 gals.	27 bush. 2 gals.	36 bush. 0 gals.	54 bush. 0 gals.
2	4 feet	30 "	4	8,712	34,848	21 " 6 "	32 " 3 "	43 " 2 "	64 " 4 "
3	4 " 4 "	1 foot.	4	2,722	10,888	6 " 6 "	10 " 1 "	13 " 2 "	20 " 3 "
4	4 "	1 "	4	4,840	19,360	12 " 0 "	18 " 0 "	24 " 0 "	36 " 0 "
5	3 " 6 in.	1 "	4	14,520	14,520	9 " 0 "	13 " 4 "	18 " 0 "	27 " 0 "
6	3 "	1 "	3	19,360	19,360	12 " 0 "	18 " 0 "	24 " 0 "	36 " 0 "
7	4 ft. 9 in.	9 inches.	2	2,151	4,302	2 " 6 "	4 " 0 "	5 " 4 "	8 " 0 "
8	4 " 8 "	1 foot.	2	1,742	3,484	2 " 0 "	3 " 0 "	4 " 0 "	6 " 0 "
9	5 "	1 "	2	2,178	4,356	2 " 6 "	3 " 6 "	5 " 0 "	7 " 4 "
10	4 " 4 "	1 "	3	2,153	6,453	4 " 0 "	6 " 0 "	8 " 0 "	12 " 0 "
11	5 "	1 "	3	1,742	5,226	3 " 4 "	5 " 0 "	6 " 6 "	10 " 0 "
12	5 "	1 "	3	2,178	6,534	4 " 0 "	6 " 0 "	8 " 0 "	12 " 0 "
13	5 "	1 "	3	8,712	8,712	5 " 4 "	8 " 0 "	10 " 4 "	16 " 0 "
14	5 "	1 "	3	2,904	8,712	5 " 4 "	8 " 0 "	10 " 4 "	16 " 0 "
15	4 " 4 "	1 "	2	2,904	5,808	3 " 4 "	5 " 0 "	6 " 6 "	10 " 0 "
16	3 ft. 6 in.	6 inches.	2	29,040	29,040	18 " 0 "	27 " 0 "	36 " 0 "	54 " 0 "

Preparation of the ground.—If the ground you propose putting your corn in is a *grass* sward or *clover ley*, the sooner you get your manure on the better. Place it in small piles at proper distances to give your field a regular portion throughout, and in order to prevent injury from evaporation, let your hands throw a few spadesful of earth over it. When you are ready for breaking ground, spread your manure and let the plough immediately turn it under, say four or five inches deep. The ploughman should take small slices, so as to be able to perfectly turn down the sod. Let the roller follow the plough, then harrow lengthwise of the furrows, taking care not to disturb the sod. This being done, let a light shovel or other small plough strike out a furrow, also lengthwise, and drop your seed, taking good care not to stint the number of grains you put in each hill, for it is much better to have to *pull up* corn plants than to be necessitated to *replant*.

If your ground is not a grass sward or clover lay, two ploughings, accompanied by rolling and harrowing, so as to perfectly pulverize the soil, will be found infinitely serviceable, but let your last ploughing be more shallow than the first, and in this instance do not put on your manure until just before the second ploughing.

In either case, if you desire (and who does not?) to raise a heavy crop, if you can possibly spare the manure, let a careful hand follow the *droppers* with a cart, and put a shovelful, or less, of well rotted manure, or rich mold, covering the corn with it. This will give a start not only to the germination of the seed, but will serve to push the young plant at its incipient state, a matter of great importance. If you cannot spare this extra manure, get *ten* bushels of ashes and *one* of plaster, mix them together, and place a gill of the mixture on each hill of corn just as the plants are piercing the earth. If you have neither of these, a table spoonful of salt on a hill will be found an excellent application.

If you have lime to spread on your corn ground, and it be either a grass sward, or clover-ley, distribute it equally over the entire surface of your field before turning down the sod—it will greatly promote fermentation and consequently prepare the food for the plants. If you have no sod to turn down, apply the lime after ploughing and harrow it in.

As soon as you discover that the corn begins to show its head, that is before it is all up, pass the harrow lightly over the whole field. This will loosen the soil, greatly facilitate the coming up of your plants, and force them forward.

Preparation of the seed.—Soak your seed corn in a solution of copperas, saltpeter, and sulphur, twelve hours before planting, draw off the water, and roll the grains in plaster. Prior, however, to rolling them in plaster, if you were to put them in tar gently warmed, and diluted with water, you would possibly do better. If you apprehend, however, a dry spell, it is better not to soak your seed.

After culture.—The great mystery in the cultivation of corn, consists in keeping it clean from weeds and the soil loose. These can be both effected by timely use of the *cultivator* and *hoe*. If however you purpose using the plough, do it judiciously; and we would advise you not to do so after the roots of your corn are of much size, or have extended to any distance across the rows; for the injury they will receive in cuts and bruises, will more than counterbalance any good they will obtain from the ploughing. If you do plough, turn your furrow from the plant and replace it again as you come down the row; this will pulverize the soil and give start to the plant. The raising a large hill about corn is getting much out of fashion, and therefore it is that the cultivator is all sufficient, backed by the hoe, to secure the best possible yield of corn. A slight drawing of well pulverized and mellow soil around the young plants is unquestionably serviceable, but it should not be carried to the extreme of raising a mound to expel the moisture.

A loamy soil is admitted on all hands to be the best adapted to the growth of corn, but should it be moist or situated low, it will be well to counteract the ill effects of situation, by laying off your field in small lands with furrows, sufficiently deep to act as surface drains—if it lies high, your field may be ploughed flat.

It will be difficult to to prescribe when you should plough, the state of the soil and growth of weeds must indicate that; you will, however, experience benefit by passing the cultivator through, and hoeing the corn when the tassels first appear. Once or twice working it after this will be enough.

As soon as your corn shall have grown to the height of a few inches, you must have all the superfluous plants thinned out, leaving the strongest and most healthy plants in the hill. And as *suckers* make their appearance, you must have them carefully taken off.

Time of planting.—Without prescribing a *day*, it might be well to say that when the *apple* tree begins to burst its bud is a safe period for putting in your corn. This happens in different latitudes, at different periods, and therefore it is difficult to arbitrarily fix upon days of planting. In the northern states they generally plant from the 10th to the 20th of May—in the middle from the 10th of April to the 20th of May, and sometimes later; in the south, according to situation, an earlier period is devoted to this business. But every planter should bear this in mind, ☞ *that it is always best to be rather early than late.*

Bake your own Bread.

The following experiment was tried by a housekeeper in this city, for the pupose of testing the economy of baking bread at home:

He bought a loaf of his baker for ten cents, which weighed one pound and three ounces. He then bought seven pounds of flour for six cents the pound, and paid one cent for yeast. From this he made eight loaves, equal in weight to that bought of the baker, and eight ounces over. The whole of the bread being ten pounds, and the whole cost forty-three cents, the cost of each loaf being four cents and four mills. To this must be added labor and fuel, which could not exceed one-fourth of the cost of the flour. Thus his bread could not have cost more than half of the price that would be paid to the baker for the same quantity.—*Phil. Ledger.*

COMMUNICATIONS.

Interesting Letter from Cleveland.

Mr. Tucker—I have briefly sketched some odds and ends, the gleanings of my last year's experience, which, if worthy of a place in your paper, are at your service.

Character of the Soil.

Although the soil of the Western Reserve is generally a strong adhesive clay; the immediate vicinity of Cleveland is a sandy oak opening, a little resembling some parts of the Genesee Country. From the absence of stone throughout this sandy plain, and the appearance of the strata where excavations have been made, especially the rounded and water worn shape of all the pebbles, the whole formation is doubtless a deposit from the waters of the lake, based at a deph varying from 15 to 30 or more feet, on clay. From the shape of the coast, there being an indentation at the mouth of the Cuyahoga river, not deep enough however to take the name of a bay, it would seem that here was an eddy, which accounts for the deposit of sand at this place.

On such a soil, plaster of course works wonders, and in connection with clover and a judicious rotation of crops, will give to the farmer a satisfactory return for his labor, notwithstanding the character of this land for barrenness has been so well established, that until quite lately it could scarcely have been given away to the practical farmer.

—

The Corn Crop—Successful Experiment.

I commenced operations last spring upon a small farm situated upen this tract, with the consolatory fact staring me in the face, that thus far next to no profit at all had resulted from the labors of my predecessor, who was the first improver of the premises, having settled upon the place and commenced clearing the land about 12 years before. Of course not much could be done the first season that would tell in the barn or granary, and in fact the labor of several years must be principally expended in making permanent improvements with a view to future profit. What was done however in the way of raising crops was rather encouraging. For instance, a small piece of corn yielded, by actual measurment, 80 bushels per acre, although the season was unusually bad for this crop. I planted our common yellow gourd seed corn, in hills 3 feet apart each way, instead of 4, the distance commonly observed by farmers in this state. My reason for this deviation from the usual course was a belief that manuring the land as I did, with about 30 loads of dung per acre, would enable it to carry the crop. I was told there would be nothing but stalks; on the contrary, the crop turned out better than usual, 50 bushels per acre being a good return here. And here permit me to state my opinion on this point, which is, that the distance should be governed by the strength of the land. I have no doubt that without manure I should have had but few ears in proportion to the stalks, while at a distance of 4 feet, without manure, there would have been the usual production of ears, and a crop probably of about 30 bushels per acre, leaving the surplus of 50 bushels per acre to be accounted for by the manure and thick planting. To make the above statement intelligible to those who plant only the small flint corn, it should be remarked that there is more than a quarter's difference between the flint and gourd seed corn.

The cultivation of my field was after the usual manner, by ploughing and hoeing twice, without raising the earth about the hills however, this practice being very properly exploded. I cut up the corn at the bottom as soon as it was glazed, bound it in quite small bundles above the ears, and set the bundles in small stooks, which, after husking the corn, and this without unbinding—no small advantage by the by—were housed at the end of 3 to 4 weeks.

—

Value of Corn-Stalks for Fodder.

I am now (March 13th) feeding out the last of these stalks to my cattle and sheep, and find them excellent for this purpose. In fact, this fodder has been my principal dependence through the winter for want of hay, and I am willing to compare stocks (in point of flesh) with any of my neighbors who have had plenty of hay, and suffered their corn-stalks to dry up in the field, the usual practice here. I have cut a good many of the stalks in one of the Columbian Straw Cutters, but the machine breaks so often, (the stalks being too large for it,) that I have at length abandoned this practice.

—

The Potatoe Crop.

I planted a small piece of potatoes in drills, the rows 3 feet apart, and the potatoes, first cutting them, about 8 inches apart in the rows. The land was manured not quite as heavily as that planted with corn, and the crop was 320 bushels per acre, at least double the average yield here, as potatoes do not produce by any means so well as in a colder, moister climate.

—

The Winter—Its Effects on the Peach.

The winter has been a favorable season here, having been steadily cold, though not severely so, with good sleighing for several weeks. The thermometer on the morning of the 12th of February, at my house, 2½ miles from the lake, stood at 14° below zero. In the city it was reported at 8° below zero, which difference, if the thermometers were accurate, can only be accounted for by the influence of the water in its immediate vicinity. From an examination made before and after this morning, I have no doubt the blossoms of the peach were killed at this time. Is it a fact that they cannot endure this degree of cold? It is of little use to cultivate the peach here, as no fruit is perfected oftener than one year out of five.

—

The Ever Bearing Raspberry.

The Shakers of Warrenville, 7 miles east of Cleveland, have the Ever Bearing Raspberry mentioned in the Genesee Farmer some time since, and in reply to my inquiries they informed me that it was procured of their brethren in Warren county of this state, near Cincinnati. The plant bears the appearance of a southern origin, continuing its vigorous growth until vegetation is killed by the frosts of autumn. New shoots start from the root all summer long, and on their extremities clusters of fruit may be seen in all stages at the same time, from the blossom to the ripe berry. Should you wish to procure this plant I will forward it with pleasure.*

—

Turning in Green Crops for Manure.

I will close my letter, already too long, with a few words touching an experiment of one of my neighbors in preparing a summer fallow. The field was in clover, which, having been plastered, was ploughed under in June when in full bloom. He then harrowed in buckwheat, which in like manner was ploughed in sometime in the month of August, and at the usual time wheat was sown on the ground thus treated. I shall be disappointed if he does not reap his reward in the shape of a good crop, and find the land the better for his experiment several years. I have little doubt this is the best way for us to fertilize our land, and keep it in good heart, and unless the land is quite poor, the clover may be mown or pastured before ploughing, which would give a crop during the following season. Yours respectfully,

Cleveland, March 13, 1837. A Subscriber.

Answers to Inquiries, &c.

Mr. Tucker—In answer to the inquiries of A. D. in your 10th No. Vol. 7, I would say that I find the China Bean to be worth in markets hereabouts, fifty cents more than that of other kinds. I sold 3 tierces of these Beans, which were sent to New York—the merchant told me they advanced the price on his other beans equivalent to 75 cents for the China Beans over the market price of others.

2. As to stock eating cut feed—I fed my stock on one third cut hay, two thirds oat straw, dry, and no other fodder, and they did better than I ever had them on hay—and my horses would not eat hay uncut while this cut mixture was in the rack. I used Green's straw-cutter—am confident I can keep one-third more stock on the same fodder, and in full as good condition.

3. I am agent for the sale of Green's Straw-Cutter, and am ready to furnish any quantity called for on short notice.

I would just state, that I have in my possession good seed corn of the Dutton kind, which perfected its growth in eighty-one days the last season, and will, as soon as opportunity favors, send you a sample of the seed.

C. S. Button.

Newark, Wayne co., March 16, 1837.

[* We shall be glad to receive it.]

HIGHWAYS—No. X.

SUGGESTIONS FOR THE USE OF PATHMASTERS.

In this essay, and perhaps one or two more, it is our intention to offer sundry suggestions for the consideration of pathmasters. We hope indeed that the office of pathmaster will soon become extinct, but this may not happen speedily, and if it should, it is hoped our suggestions will not be altogether useless. Pathmasters should know, that the trust which they are called to execute, is very important and responsible. Of them it is required and expected, that they will make roads, or cause them to be made, in their respective districts, when this is necessary—that they will repair such roads as are out of order, and keep the whole in a good condition. The trusts of pathmasters, involving such responsibilities, have rarely been fulfilled to a satisfactory extent. Although heavy assessments in labor have annually been applied to the use of roads, yet the roads have not in general been improved, as it was reasonable to suppose they might be. The most of them have indeed been kept in a condition that ought to have been deemed intolerable. To the conclusion therefore we are compelled to come, that there has been fault in the pathmasters, either that the labor subject to their disposal has not been faithfully applied, or that it has been applied in a manner so injudicious and unskilful, as to have been rendered nearly or quite unavailing. It will be our object therefore, in this essay and subsequent ones, to suggest what we consider as having been the principal errors of pathmasters.

In modern times, since turnpiking came into use, and has been considered as furnishing models for imitation, the greatest and most predominant error of pathmasters has been that of ploughing and scraping, or turnpiking, as it has usually been called. As this error has been fully treated of in the preceding essays, it will be sufficient here only to say, it has absorbed the greater part of the funds intended for the use of roads, and has wrought incalculable mischief to the roads themselves. Excepting only at some particular locations, the practice of constructing roads in this manner should be entirely abandoned.

Among the minor errors of pathmasters may be reckoned the following: 1st. Calling out too many hands to work on the roads at one time, and causing the work assessed for the use of roads to be performed in too great a hurry. We know this error grows out of our road system, and that no other than a very partial correction of it can be expected, while the system continues. It is, however, an evil, and a very serious one. It is scarcely less absurd to suppose, that looking to roads once a year, and devoting only three or four days to the care of them, is sufficient to do them justice, than to suppose that a farmer can do justice to the fences of his farm, by looking to them, and putting them in repair, only once a year. The truth is, roads require a constant oversight, no less than any other department of business. It would be better if pathmasters would arrange their road work so as to have it done at different times, and to have their operations continued along, short intervals intervening, during the whole season. And if our road system were to continue, it would be important to have it amended, so as to encourage pathmasters to do this, by securing to them a generous compensation for the excess of their labor upon the roads above their assessments. *Here* we discover *one* of the rotten places in our public system of policy. It is of the first importance that roads be kept under a constant watchfulness; but this is not done, nor

c m it be expected it will be done, to any considerable extent, under existing laws.

2. Another error which very generally prevails among pathmasters, is, that they are not sufficiently careful to smooth the surface of roads. All know, that to render the surface of a road smooth contributes much to the safety, ease and speed of traveling, and certain it is, it contributes no less to the strength and durability of the road itself. We frequently see badly cut up roads, for in this section of the country such unsightly objects are of no rare occurrence. But where roads are badly cut up into holes, we generally see only a hole in one place and a hole in another, and these holes are separated from each other by parcels of the road not cut at all. Now how is this unequal cutting to be accounted for? Why does the road cut in one place and not in another, while the materials composing the road are in every place the same? There must be some reason for this difference, and doubtless the only true reason is, that there were at first unevennesses in the road. Some places were lower than others; into these low places the water gathered, and here it soaked into the ground more plentifully than at other places, thus rendering the ground spungy, and less capable of resisting the weight of wheels. But if no more water should soak into the ground at these low places than at others, still they would be more likely to be cut up, because wheels coming down into them, come with an increased force, and with a motion exactly suited to work mischief to the road.

If pathmasters, while practicing their favorite theories in ploughing and scraping, had been careful to make smooth work, the evils resulting from their misapplied labors would have been much less disastrous than they have been. But they have not in general done this. Many of them have allowed the ground that was scraped upon roads to remain just as it dropped from the scraper. Of course the roads became at once intolerably bad, and altered only by waxing worse and worse. If the unprofitable and mischievous practice of working roads in the form of turnpikes is to be continued, the utmost care should be taken to render the surface of such roads as smooth as possible. It will not be enough to give them one smoothing at the times when they are made and supposed to be finished. It will be necessary, some few days after a road shall have been finished in this manner, to see to it again, and take care, as the ground settles under the pressure of travel, that all parts of the road settle alike. But in whatsoever manner roads are constructed, it is, in all cases, fundamentally important that their surfaces be rendered smooth. D. B.

Marcellus, Onondaga co. Feb. 1837.

Siberian Oat Crop.

Mr. Tucker—My second experiment in raising Siberian Oats, has fully confirmed me in the good opinion I formed of them last year. Although somewhat unfortunate in the cultivation of this crop, yet I am persuaded I obtained a heavier crop than if I had sown any other kind with which I am acquainted. The land on which they were sown was the previous year to corn, and was in good condition, although this was the fourth crop in succession. Being sick myself, I had to depend upon an inexperienced hand to sow them, who sowed upon a part of the field at least twice as much as he ought, the effect of which was that many of them lodged and did not fill at all.

My account against Siberian Oats is as follows:

Dr. To 1¼ days' ploughing, (3 acres,)	$4 75
" harrowing, sowing, &c.	1 38
" 7 bushels seed	5 25
" harvesting,	8 00
	$19 38
Cr. By 200 bush. oats, at 4s	$100 00
Balance in favor of oats,	$80 62

I have no doubt they went as high as 80 bushels to the acre, allowing for the lodged places. The straw is very bright and clear, and, when not sowed too thick, as likely to stand up as the common kind. They require strong land—to be sowed early—not to exceed two bushels to the acre; and with a season ordinarily favorable, I think 60 bushels to the acre may be calculated upon. This I call a pretty fair operation. Yours, &c. O. P. Q.

East Bloomfield, March 8, 1837.

Query for the Farmer.

Is there any efforts making in the country where the hemlock is abundant, to save the gum? It has become a valuable article for the city market, and we have very little doubt that in the hands of a person who understood the manner of extracting it, the whole expense of clearing a new fallow might be saved from it. The mode used in this neighborhood, is to cut the bark into small pieces, boil it, and strain out the resinous gum; every pound of it is worth 37½ cents, and it is totally lost in the ordinary mode of clearing land. We have not been able to lay our hands upon any writer who describes this very common tree, but suppose it to be the tree recorded by Peter Collinson, (who was one of the earliest settlers of Pennsylvania,) as having been introduced by him in 1736 to the English collections;* nor have we been able to find any chemical analysis of the gum itself, although the possession of its properties and constituents would enable us to form a better estimate of its value. The druggists we believe are giving enough to pay us well for taking care of it, and this circumstance, connected with the price that the bark will command at the tanneries, is a powerful inducement to prevent the waste that is continually exhibited over a large extent of the United States and Canada. Perhaps some of your scientific readers may furnish us with an answer to these inquiries, that may be useful to Many new settlers.

Accelerating the Growth of Seeds by Scalding.

Cobbett, in treating of the locust, says, that he was recommended by an American gentleman (Judge Mitchell of Long Island) to boil the seeds previously to sowing them. (See *Arb. Brit.*, p. 624.) And the idea is not so ridiculous as might at first sight be imagined. The subject was noticed by Professor Henslow, at the meeting of the British Association at Bristol; and the following is an extract from a communication by the professor to the *Magazine of Natural History*, vol. ix. p. 477:—

"Sir John Herschel lately sent some seeds of an acacia from the Cape of Good Hope, to Captain Smith of Bedford, with directions that they should be scalded, in order to secure their germination. Captain Smith having presented me with a dozen of these, I subjected them to the following experiments:—Two were placed in boiling water, and left to soak for an hour, until the water had become cool; two were kept at the boiling temperature for 1½ minutes; two for 3 minutes; two for 6 minutes; and one for 15 minutes. Some of these were sown immediately, under a hand-glass, in the open border; and the rest were kept for 3 or 4 days, and then sown in a hot-bed. The following are the results obtained:—

Under the hand-glass,—

1, boiled for 1½ minutes, failed.
1 - 3 minutes, came up in 14 days.
1 - 6 - - - 13 days.
1, not steeped at all, did not germinate.

In the hot-bed,—

1, boiled for 1½ minutes, came up in 8 days.
1 - 3 minutes - - - 7 days.
1 - 6 - - - 7 days.
1 - 15 - - - 13 days.
2, in boiling water, left to cool - 9 days.
2, not steeped - - - 21 days.

We cannot draw any decided inference from the single seed, which was boiled for 15 minutes, having been more retarded than the rest, as it might have been a bad specimen; but it seems very clear, that the heat to which these seeds were exposed must have acted as a decided stimulus to their germination; whilst it is a very singular fact, that they should not have been completely destroyed by it. Had I supposed it probable that a seed, which was boiled for 15 minutes, would have germinated, I should have boiled some of the others still longer, in order to ascertain the extreme limit to which such severe treatment might be carried without destroying the vital principle."

* Pinus canadensis.

In pursuance of this subject, at the Bristol meeting, "Mr. Hope mentioned a practice, common in some parts of Spain, of baking corn to a certain extent, by exposing it to a temperature of 150°, or upwards, for the purpose of destroying an insect by which it was liable to be attacked. Dr. Richardson mentioned, that the seeds sold in China for the European market, were previously boiled, for the purpose of destroying their vitality, as the jealousy of that people made them anxious to prevent their exportation in a state fitted for germination. Upon sowing these seeds, he had, nevertheless, observed some few of them were still capable of vegetating.'—*Edin. New Phil. Journ.*, vol. xxi. Oct. 1836, p. 332.—*Loudon's Gardener's Magazine.*

Long manure.

Vegetable and animal matters, when brought into a state of fermentation, by the agency of air, heat and moisture, immediately give off carbonic acid gass, which, if confined beneath the surface of the soil, will become mixed with the moisture there, and be taken up by the roots of plants. And what is carbonic acid gass? It is composed of two parts of oxygen, a constituent of atmosperic air, and one part of carbon, the principal constituent of of plants, rendered volatile by the heat of fermentation. It is the digested food of plants; it becomes incorporated with water in the soil; is taken up by the spongeoles or roots of plants; transmitted through the sap vessels to the leaves; is there decomposed by the sun's rays; the oxygen passes into the atmospere; the carbon passes down through another set of vessels, and being gradually disengaged from the water which conveys it, by evaporation, it becomes a solid substance of the plant. Carbon constitutes principally the structure of the stems, branches, and roots of plants, and it can only find access into plants in a fluid state, combined with oxygen. From this view of the matter, the reader will understand why we recommend long manure for hoed autumnal ripening crops,—and why we insist that one half of the value of cattle dung is lost by suffering it to be reduced to the condition of short muck before it is buried in the soil. All vegetable matters contain more or less carbon; and carbonic acid gas is invariably produced in the fermenting and putrifying processes.

Beet Culture.

M. Soulange-Bodin was some time ago appointed Vice-Secretary to *La Societe Royale et Centrale d'Agriculture;* and, on the 10th of April last, I had the pleasure of hearing him read a very elegant discourse, which was highly applauded by the members present, and has since been published in a cheap monthly agricultural journal called *L'Agronome.* In taking a general review of the present state of agriculture in France, M. Soulange-Bodin notices the great increase of the culture of the potato; and he considers the beet as a source of incalculable riches, not only for France, but for Europe in general. Of course, the value of the beet depends mainly on the sugar which can be procured from it, but not altogether; for the beet is much better adapted, as a green crop, for feeding cattle in a warm climate, than either the turnep or the potato. The culture of the silkworm, and that of the Saxon merinos, occupy a good deal, also, of public attention; and lastly, the culture of the forests. M. M. Vilmorin, Michaux, Jaume St. Hilaire, Mirbel and Loiseleur Deslongchamps, are represented as continually urging the great importance of introducing all kinds of foreign trees among the indigenous ones in the native forests. Great attention, it appears, is being paid to the study of the insects which attack trees; and Michaux is stated to have made some valuable discoveries on the subject: but I refer you to *L'Agronome.—Loudon's Gardener's Magazine.*

Brooks' Silk Spinner and Twister gave great satisfaction to all who saw its performance, and it stands highly commended in the proceedings of the Agricultural Convention. With it a woman will convert half a bushel of cocoons into sewing silk in a day, or into twist, or into single, double or threble threads, of any required fineness. The machines will be kept for sale at W. Thorburn's—price, for family use, thirty to forty dollars.—*Cult.*

THE GARDEN.

To every farm a plat of land should be appropriated solely for a garden.

To render a garden secure, it should be enclosed with a good fence, and to make it productive it must be dug deep and well manured, and the weeds destroyed, particularly in the early season of the year. till the vegetables have taken deep root, and by their vigorous growth covered the ground.

A garden, well managed, is an ornament and a source of profit, but if neglected is a reproach and a loss to the owner.

Though a garden affords neither bread or meat, yet it yields such a rich variety of sauce as renders less of either necessary, and at the same time gives a higher relish to both. A free use of the culinary vegetables, raised in a well improved garden, contributes much to the economy, support and health of a family—but it is a subject of inquiry whether we do not consume more animal and less vegetable food than our health or comfort requires.

Whoever reflects on the products which cultivated gardens afford, will be satisfied that the profits of the land, as well as the labor applied to them, are amply repaid—for if our gardens have not been grossly neglected, they will afford us, early in the spring, before the frost of winter is dissolved, fresh parsnips of a rich saccharine nature. Later in the season, but as soon as vegetation will permit, our beds of asparagus will yield a supply of one of the richest and most delicious pot herbs of greens, that our country affords—and with due care will continue that supply for a considerable time. Early in the summer, and through the autumn, we may have a sufficiency of beets, carrots, peas and beans, and before mid-summer squashes and potatoes, and autumn will ripen the onions for use. A portion of these vegetable, as well as others not enumerated, should be preserved in the cellar for the use of the family in the winter. Though potatoes, strictly speaking, belong to the field, and should principally be raised there, yet a place is assigned them in the garden: but this is only done for the use of the family before those in the field are ripe. In a garden, the ground under fruit trees, if properly manured and carefully managed, will yield potatoes, and so far from injuring, will benefit the trees, by destroying the grass and weeds, and keeping the ground open and loose. Potatoes thus raised, afford an additional profit from the same land, and, what is of more importance, they save the time and labor of traveling to the field to gather them for daily use.

The fruits which may be raised from vines are convenient for the family, and some of them ought to grow in every garden, such as cucumbers, melons and grapes.

Melons are the richest fruit our climate yields, and grapes may be raised of a fine flavor. These vines may be cultivated with little labor and great success, and they require but small plats of land.

Our ill success proceeds from not properly manuring our land, not keeping it clean, and suffering our vines to stand too near each other. The holes in which cucumbers and melons are planted, should be three feet apart, and large and deep: they should be filled and nearly full of manure from the hog-stye, mixed with mould, and but few seeds put in each. The best cucumbers raised are from seed planted the first of June, but melons should be planted earlier.

A portion of the garden should be appropriated to the growth of fruit trees, such as pears, quinces, peaches, and plums of various kinds. The pear and the plum tree is better suited to the cold, and suffers less from it than the peach. The former should be placed to the north, and the latter to the south: the hardiest tree would then protect the tenderest against the inclemency of the season.

It is important to select trees that will yield fruit a good quality and fine flavor. But fruit trees, as well as orchards, must be pruned, the ground manured and kept open, and the caterpillars and other insects destroyed. "It ought," says a late writer, "at the same time, to be recollected, that as the improved and most delicious fruits have come of careful cultivation, and are derived from originals of very ordinary character, so if the trees are treated with neglect, their fruit will degenerate, and in a short time be no longer cognizable as the same."

The fruit which a good garden will afford is a luxury, of which every farmer may often partake, and that with small expense. It requires the labor and care of a few hours only in the week during the season of vegetation. Such fruit of itself will make a better and more wholesome supper than roasted beef or poultry—it will make a poor dinner rich.

But there is another species of fruit, which has not been mentioned, which ought to be raised in every garden. Current bushes may be raised with ease, and preserved with little labor for a long period. They may be multiplied by dividing the roots, or what is much easier by simply setting the slips into the ground. They ought to be set in rows, each bush from three to four feet from the other, so as to admit the sun, the air, and the hoe freely between them. And if the ground is kept open, well manured, and the grass and weeds destroyed, they will yield abundantly. Their fruit is wholesome, and a jelly may be made from them that is not only pleasant and agreeable to the palate and stomach, but useful in inflammation of the throat.

The Gooseberry is a native of Europe. The bush is propagated by cuttings or suckers, but the former way is preferable, as the roots are less likely to shoot out suckers. Straight shoots should be selected, about 8 inches long, and planted about half the length, in good mould or light earth. The best time for planting them is in the autumn, just before leaves begin to fall.—It is desirable to sow the seeds of ripe gooseberries, as by this means you have the chance of new varieties, and the bushes generally grow in a better shape than either by cuttings or suckers.

In pruning these bushes, observe to keep the stem quite free from shoots, at least that from ten or twelve inches from the ground, there be but one regular stem. They may be trained on trellis work, where the fruit has grown and ripened well; and it is a most desirable method for small gardens, as they have a neat appearance, take but little room, and form a good back ground to flower-borders.

Gooseberries are preserved in the green state with little trouble or expense, so as to retain their natural flavor for tarts or cream, &c., and, when ripe, they make excellent jam, and a delicious and ornamental sweat-meat.

To procure Gooseberries large for the table, it is desirable to cut off with a pair of scissors all the small berries, which are eqully good for the purpose of tarts.—*Tennessee Farmer.*

Bitter Rot.

The destructive effect of this disease on the fruit of our orchards, has for many years past, been a subject of general complaint. The respectable source from which the following recipe has been obtained, induces us to advise our readers to make a trial of its efficacy. The gentleman to whom we are indebted for it, and whose respectability and veracity may be confidently relied on, used the prescription repeatedly, and with uniform success, for the destruction of Caterpillars; last year he tried it for the same purpose on some trees, the apples on which had before been rendered useless by the Bitter Rot; and he had the gratification of finding it not only effectual for the purpose designed, the destruction of the Caterpillars, but that the fruit of the succeeding summer was perfectly free from the disease to which it had so long been subject, and by which its value had been entirely destroyed. A single experiment it is true, is insufficient to establish the general efficacy of the remedy, but the success of it is amply sufficient to induce its repetition; and we hope many of our readers will do so next Spring, and apprise us of the results.

Recipe to destroy Caterpillars, and to cure the Bitter Rot.—In April or May bore a hole with a half inch augar, about half way through the tree, put into it a tea-spoonful of the flower of sulphur, plug the hole up tight with a wooden pin. The tree will not be injured, and the Caterpillars will be destroyed and the Bitter Rot cured.

Vitality of Seeds.

It will be in the recollection of our readers, that in October 1834, we published some interesting details of the opening of a British tumulus, near Maiden Castle, by Mr. Maclean, who found therein a human skeleton, and a portion of the contents of the stomach, containing a mass of small seeds, which neither the operation of the gastric juices, nor the lapse of probably twenty centuries, had sufficed to destroy. Many of these seeds have been subjected to various careful experiments, to ascertain wether the vital principle was extinct; and we have the satisfaction of announcing that Professor Lindley has happily succeeded in producing plants that have confirmed the opinion expressed by the learned professor, on a first inspection of the seeds, that they were those of the rubus idæus, the common raspberry. The plants are now very vigorous, have produced much fine fruit this season, and form an object of the greatest curiosity and attraction to horticulturists. This highly interesting circumstance proves the raspberry to be an indigenous plant in this country, growing at a verry early period, and then constituting an article of food. (*Dorset Chronicle*, as quoted in the *Bath Journal* of Sept. 12, 1836.) We have seen the raspberry plant alluded to in the Horticultural Society's garden. The facts are extremely interesting; and we hope Dr. Lindley will compare this case with others of the kind upon record, and favor the world with a memoir on the subject.—*Loudon's Gardener's Magazine.*

STRAWBERRY AND RASPBERRY.

THE GOOD QUALITIES OF THEIR FRUIT CONSIDERED.

These two berries or fruits, on account of their early maturity, easy culture—delicious flavor as a desert, in any way they may be used—and healthful qualities, are universally acknowledged as favorites, and coming at a season when we stand in most need of wholesome ripe frits, after wintering on rich meats and dry provisions, they are acceptable to every appetite.

As soon as the fruit of the strawberry is ripe and gone, that of the raspberry comes in to take their place, and are the next best fruit to eat with cream, and otherwise, where the right sorts are cultivated.

It has been a subject of surprise to me, that there is not more attention paid to the culture of those very valuable and delicious fruits, when they are so easily raised and require so small a spot of ground to supply a family plentifully, say from ten to twenty square rods of good ground, well prepared, regularly and properly cultivated, would be sufficient in most cases for each sort of those fruits.

CULTURE OF THE STRAWBERRY.

The greatest difficulty attending the culture of this fruit, is to keep the plants bare of weeds and grass that spring up amongst them. In the commencement every care ought to be taken as a preventive; in no case, is the old saying more applicable, "an ounce of prevention is better than a pound of cure." By digging the ground two spits deep and laying the top one in the bottom, the seeds of weeds will by this means be buried so deep as to prevent their vegetating, and by top dressing with ashes or fermented manure, there will be but little difficulty of keeping the plants bare of weeds if the hoeing is regularly performed before the weeds get large.

Make the beds four and a half feet wide, with two feet alleys between them, in these plant four rows of plants, 8 to 12 inches apart, in the rows beginning nine inches from the alleys, and shovel the mould out of those alleys about two inches deep, and throw it on the beds, leaving them a little rounding, especially in winter to throw off the water.

The best season for planting, is as soon after the fruit is ripe and gone as possible, until the middle of July and from the middle of September to November—they may also be planted any time when the ground is not freezing, but will require more care in watering, or if planted late will require covering with litter to prevent the frost from throwing the plants out, and under any circumstance, unless the atmosphere and ground is damp when the strawberries are planted they must be frequently watered until they appear to have taken root, and all runners must be shortened as they start from the mother plant, or else they will exhaust the crop and smother it as a weed. The sorts recommended by Lindley, one of the best practical modern writers, is the Early Scarlet, Pine Apple, Hautbois, and Alpines, and their sub-varieties,—out of which he makes his catalogue to contain 232 sorts. He, however, only recommends for a small garden 16 kinds. When the plants are beginning to bloom, lay straw

or litter under the vines to keep the fruit from becoming gritty—and should dry weather set in when the fruit has begun to swell, it will amply compensate for the trouble of watering the plants freely; the evening is the proper time, where the water will remain until the next day's sun evaporates it.

RASPBERRIES.

Lindley enumerates in his catalogue 22 varieties, but only recommends the following selection for a small garden:—Barnet's Cornish, Double Baring, Red Antwerp, Yellow Antwerp, and William's Preserving. M'Mahon recommends the Red and Yellow Antwerp, Smooth Cane, or Double Baring, and common Red Raspberry, and Forsyth the same. In addition to the last four sorts, I would recommend Brenford's Red; the Antwerps are certainly a very superior raspberry, but north of the Potomac, they would mostly require to be carefully bent to the ground, and fastened there with hookened pegs and covered lightly with straw or other litter, or earth, being rather tender to withstand our winters, but all the others are hardy and very productive.

The ground intended for planting being good, or made so, and being provided with good plants, and the ground being deeply or well cultivated, lay off the rows five or six feet apart, and plant four feet apart in the rows, and cultivate among them so as to keep clear from weeds and grass; and as soon as the plants begin to bud cut the stalk down to the ground, and from the root will spring several suckers; preserve only 2 to 4 of them and hoe up the rest, and those preserved will bear fruit the next season. When this fruit is ripe and gone, cut down the stalks to the ground; by this time many suckers will be growing around where those stalks have been cut from, select four or five of the best of them, situate in a suitable group around the old stock for bearing fruit the next season, dig the ground among the plants, and remove all the suckers, except four or five as above; this must be done as soon as the fruit is ripe and gone, for on this depends the next year's crop being good or bad. In the fall manure them and dig it in, and in the following spring cut about one half of the stocks of each adjoining hill, tie their ends together in the form of festoons, which have a handsome appearance, and will save the expense and trouble of staking the plants, and removing the old stakes as soon as the fruit they have borne is gone. Hoeing up the supernumerary suckers, and manuring the plants every other year, will very much increase the quantity of fruit, as also its size and superior flavor. By pursuing the above course, good crops may be raised for five or six years, when new plantations ought to be made. —*Balt. Far.*]

ROBERT SINCLAIR.

From a Pennsylvania Paper.

SPRING WHEAT.

In addition to the testimony of Mr. McCall, we have met with the following certificates on this subject, from gentlemen living in Somerset county, Pa. with all of whom we are personally acquainted. It may not be amiss to state, too, that spring is at least two weeks later opening in that county than in this:

STOYSTOWN, Somerset co., Dec. 28, 1826.

"I certify that I have raised several crops of Spring Wheat, which has always produced good crops, and this year is in great demand. All who sowed it last year got good crops, and it makes the best sort of flour; I was the first person that raised it in this county, and think it preferable to any other sort of wheat, from experience of raising it several years.

GEORGE GRAHAM."

"STOYSTOWN, Somerset co., Dec. 28, 1836.

WE, the undersigned, are perfectly acquainted with the Spring Wheat, which David Sherer has purchased of our neighbors. We have raised it and seen it raised, and know it to produce good crops, good flour, and never knew it to be hurt by the fly or mildew, therefore we would recommend it as preferable to any other wheat.

S. KNEE, DAVID HITE,
SAMUEL STATLER, CHARLES HEFFLEY,
GEO. ACKERMAN, JOHN HITE,
JOHN MEFF, JOSEPH IMHOFF."
SIMON KELLER,

Turneps, Corn, Potatoes, &c.

Assuming that 600 bushels of Swedish turneps will grow on an acre of ground which will produce thirty-five bushels of corn, and that six bushels of the Swedes will fatten as much as one bushel of corn, it will be seen that one acre in ruta baga will go about as far in making beef as three acres in corn, with the further advantage that the latter will cost four times as much labor in its culture as the former. We have given an instance of the Swedes yielding more than 1500 bushels the acre, and the opinion of an intelligent feeder that two bushels are as much for feeding, as one bushel of corn. The mangel wurtzel, the carrot and the parsnep, may be all raised in field culture, at about the same expense as corn, and they will give as great a yield, and afford as much nutriment as the ruta baga. The potatoe, whose culture we are all acquainted with, should be made to yield 300 bushels per acre; and these afford a far more profitable food than grain. A bullock will consume from 120 to 240 pounds of ruta baga per day; but if full fed with this or other roots, they will consume but little hay, and have little or no occasion for water.—*Cultivator.*

Importance of Early Ripening Crops.

To us, in so high a latitude as we live in, it is important that we pay particular attention to cultivating such variety of crops as shall ripen early and therefore not so liable to be cut off by early autumnal frosts as those which would be, if they required a longer time to ripen. Many of our farmers by care in selecting seed from such stalks or heads as ripened first have very essentially improved the crops in this particular. Nature accomodates different vegetables or indeed the same vegetable to the various lengths of the seasons in which it may be cultivated. Thus the corn (Maize) which is cultivated south of us, requires a much longer time to ripen than that cultivated north of us. The same may be said of wheat. Perhaps the latter vegetable varies more in the time of its growth or coming to maturity than any other.

Some varieties of it, as the winter wheat, require nine or ten months, while the other variety called spring wheat, requires not half the time. Humboldt remarks that in some parts of South America, the wheat crop ripened in *ninety* days from the time it was sown, and at Hudson's Bay it ripened fully in *seventy* days from the period of sowing. We have no doubt that wheat obtained from the more Northern parts of Canada, would ripen much sooner than that which has been cultivated for a long time in our latitude. Would it not be worth some little trouble and exertion to obtain seed from that region? Indeed we think that it would be well for our Agricultural Societies to take pains to obtain more information respecting the agriculture of this part of America, and ascertain what could be obtained from there that would improve the crops at home, either in their qualities or in their coming into maturity earlier.—*Maine Farmer.*

PATTERSON, N. J.—There are 32 manufacturing establishments in Patterson, which employ upwards of 3000 persons, whose wages exceed $500,000 per annum. Other manufactories are about to be built.

Agents for the Rochester Seed Store.

OUR distant friends and the public will find a large assortment of Garden, Field and Flower Seeds, which may be relied on as being fresh and genuine, put up and labeled at the Rochester Seed Store, for sale at the following places:

W. & G. BRYANT, Buffalo
G. W. MERCHANT, Lockport
WILLIAMS & DORRANCE, Batavia
GATES, BRADLEY & Co. Le Roy
J. F. WYMAN, Geneseo
J. B. DUNGAN, Canandaigua
BOGARTS & WYNKOOP, Geneva
HOLDEN & VINCENT, Oswego

The above gentlemen are authorised to receive orders and payments for us, for seeds, trees, plants, or any other articles in our line. REYNOLDS & BATEHAM.

march 18

Durham Bulls.

A FULL-BLOODED, short-horned Durham Bull, IMPROVED BREED; and one two years old the ensuing spring, five eighths blooded, will be sold by the subscriber if applied for soon. The purchaser may depend on the genuineness of the stock. Gentlemen wishing to improve their breed of cattle would do well to purchase them, particularly dairy men. JOSEPH SAVAGE.

Syracuse, Onondaga Co. March 10, 1837. mar 18 3t

To Nursery Men.

THE ROCHESTER NURSERY FOR SALE.—The subscribers, contemplating the enlargement of their seed business, and wishing to give it their undivided attention, offer to sell the whole of their Nursery, Garden, and Greenhouse business, including the whole stock on hand, and an unexpired lease of the land.

The Nursery occupies five acres of ground, and consists of about one hundred thousand trees, shrubs, vines, &c. from one to four years old, embracing a good assortment for the market. There is a ready sale for nursery productions in this place, and the whole will be sold on very favorable terms. Or, as a large part of the trees are small, and suitable for transporting, we will sell that part separately to any person wishing to establish a nursery in some other place.

REYNOLDS & BATEHAM.

Rochester, N. Y. March 18, 1837. 4t

WILLIAM ATKINSON, *LAND AGENT*, 17 Exchange-street, Rochester. ☞ Farms for sale.

march 4 6m

White Italian Mulberry Seed.

A FEW pounds White Mulberry Seed, warranted of the growth of 1836; for sale at the Rochester Seed Store. As the supply this year is inadequate to the demand, persons wishing to purchase will do well to improve this opportunity.

march 4 REYNOLDS & BATEHAM.

Choice Seeds for Farmers.

NEW French white Sugar Beet, *imported.*
Mangel Wurtzel, or Field Beet.
English purple Top Ruta Baga.
Large Orange Carrot, *for stock.*
White Dutch Clover, perennial Rye Grass, Lucern, Trifoil, Skinless Oats, Broom Corn, &c. &c. For sale at the Rochester Seed Store No. 5 Arcade Hall, by

feb 25 REYNOLDS & BATEHAM.

KEDIE & HOUGHTON, Importers of English Field and Garden Seeds, beg to apprize the public that they will offer for sale this month the largest importation of the choicest and best varieties of every kind of Garden and Field Seeds ever offered to the public in Western New-York, all of which have been selected from the most eminent growers in the Old Country, (and of the growth of 1836,) which, together with a large assortment of Seeds of American growth, they confidently submit to the public as being unequalled by any ever offered in any part of the United States, and by adhering to a strict determination of offering no other seeds but the vitality of which shall have been tested, they solicit a share of the public patronage.

K. & H. deem it necessary to state, that Mr. Kedie's intimate connection in England with most of the practical and scientific agriculturists, horticulturists and botanists, with whom he has passed all the former part of his life, gives him an advantage in his selection of seeds for the public good, not surpassed by any other establishment in the Union.

No 6 Buffalo-street, west corner store of the Eagle Block.
Catalogues to be had at the store.
The highest price paid in cash for Grass Seed.
Rochester, Feb. 7, 1837. feb 25

Rochester Seed Store—1837.—No. 5 Arcade Hall.

REYNOLDS & BATEHAM having made their arrangements for the season, would inform the public that they are now prepared to execute orders for all kinds of SEEDS, at short notice.

They have just received from one of the most respectable dealers in London, a large supply of English seeds, which were shipped to their order last fall, of the growth of 1836—which, together with their assortment of American growth, renders their present stock the most extensive and complete ever offered in this country. Their experience in the business in this place, and their extensive acquaintance with seed growers and dealers, enables them to obtain the greatest variety of seeds, from the best sources, and on the most favorable terms; as well as to select such as are best adapted to the soil and climate of this country.

Wishing to sustain the reputation of the ROCHESTER SEED STORE, the proprietors are determined to sell only such articles, and at such prices, as will give general satisfaction, and ensure a continuation of the liberal patronage they have hitherto received.

Merchants and others supplied with seeds at wholesale, by weight, or in boxes for retailing, at a liberal discount. Catalogues may be had at the store gratis, or sent by mail if desired. REYNOLDS & BATEHAM.

feb 18

Morus multicaulis Seed.

THE undersigned offers for sale the seed of the genuine Morus multicaulis, imported direct from France by Smith & Sons, New-York, and warranted to be the growth of 1836. Said seed is put up in half ounce papers, and will be sent per mail, free of charge, to any part of the U. S. on the receipt of $3 for one, or $5 for two papers. Notes of all solvent banks received in payment. This seed is warranted to produce the genuine Chinese variety, and the money in all cases will be refunded on satisfactory proof to the contrary. Short directions furnished to each order, for cultivators.

SETH WHALEN, P. M.

feb 25 5t Whalen's Store, N. Y.

Morus Multicaulis.

JOSEPH DAVENPORT offers for sale 50,000 plants of the true Chinese Mulberry, or Morus multicaulis. Trees will be carefully packed and forwarded as early as desired. Orders must be sent to Colerain, Mass. till the 15th of March; after which time to Hartford, Ct. All inquiries will be attended to at his plantation, 5 miles south-west of the city. Early orders only will be supplied, as arrangements will be made to use all not called for soon.

Colerain, Jan. 23, 1837.

Gelogical Survey of the State.

The first annual report of the State Geological Surveyors, makes a document of 112 pages, and contains a mass of valuable information. The following is the conclusion of the report of Professor VANUXEM:—

We have said that in the United States proper, no trace of the undoubted volcanic products has been found, whilst in France there exists, from Auvergne to the mouths of the Rhone, upwards of two hundred extinct volcanoes.—Extinct volcanoes are numerous along the borders of the Rhine, and in other parts of Germany and Hungary. Italy is full of these products; they are common in Spain, Iceland, Ireland and Scotland; in fine, there are few parts, of any great extent, in that continent, that do not contain them.

Of all the phenomena of inanimate nature, none are more remarkable, or of more importance, than the uplifting of the rocks, which form the crust of our globe, whether considered in relation to all organized life, to whose existence it is essential, or from the extraordinary circumstances, that in every part of our Globe the inclined rocks, with exceptions not affecting the general law, pursue a north-northeast and south-west direction, or when not inclined, one of the series of rocks, or parallel fissures, common to all rocks, pursue the direction of the disturbing forces, so far as my observations are extended; or finally, from the simple means used to produce this stupendous result.

That the crust of the earth has been uplifted, is a position which geologists now concede, for independent of the difficulty of finding a cause adequate to the forming of caverns to contain the disappeared water, and which shall be in conformity with the laws displayed in creation; no cause can be found upon than supposition, adequate to produce that appearance of successive series of rocks which extend, though not continuously, over the whole surface. Besides it is in opposition to all the facts acquired, either by experience, experiment, or observation, as to the nature of the interior of the earth.

Experience shows that all water met with in mining, comes from the surface. It is all fresh water, excepting in those instances where fresh water exists either in mass, or disseminated throughout the rock; no cavities are found in the rocks, excepting those of limestone, and the caverns there existing are all, or were once all, above the ocean's level, and have been formed by surface running water. Moreover the opinion is inadmissable from the density of the globe being about three times greater than the rock at the surface, from the non accordance, also, with the mass of facts obtained from a knowledge of the whole series of rocks, including all volcanic phenomena likewise; and finally, from the fact that by observation with the thermometer the temperature of the earth below the point of no variation, increases in descending perpendicularly, one degree, for about 80 feet of depth.

The increase of heat of one degree for 80 feet of perpendicular depth, or which is the same 75 degrees for every mile of that depth, will give us for a crust of 200 miles in thickness, a temperature greater than the medium welding heat of iron. In the same ratio, at less than 400 miles, from the known fusibility of the components of our crust, we have igneous fluidity as an essential permanent condition of our planet, furnishing to those parts of its surface, where active volcanoes exist, a constant supply of their liquid materials.

From the fact, that in every part of the globe, the composition of the crust below those rocks which contain organic remains, is chrystalline rocks; that that those rocks are co-extensive with the whole fluid mass. Knowing that the effect of chrystalization is expansion; that to this property water, in freezing, bursts our conduit pipes, splits our trees, and rends our rocks; as a consequence too, chrystallized bodies float upon their fluid material; an expansion of a crust, of a few hundred miles in thickness, from the known expansion of many mineral substances in chrystallizing, gives us an elevation greater than the height of any mountain known, and to this force, a primary cause, we owe our uplifted rocks, our mountain chains and parallel fissures.

Combining with the expansive force of chrystallization, the effect of its taking place, or operating layer by layer, or rock by rock; likewise the tides and currents of the fluid mass, its oscillations and undulations; likewise the risings and fallings of an unstable surface, and the difference of expansion arising from the heterogeneous nature of the crust, and we have ample materials, not only for the explanation of already collected stores of facts, but for the greatest extension to explanatory geological investigation.

Besides the general cause of the uplifting of strata, others may be mentioned; but their operation has been very limited in comparison with that of chrystallization. The most obvious one is volcanic action, properly so called; but its results or effects, from all known data, are so partial as to admit of no higher agency than that of an adjunct or auxiliary, and that subsequently to all the first acts of the first named cause.

Further, it may not be unimportant to mention, that chrystallization is to organic, what life is to organic matter. As the latter has fashioned the protean forms of animated nature, has filled the earth with countless myriads, and heaped them up in mountain masses; the former, though always the humble subordinate, has been no small instrument of the allwise beneficence. In no part of the crust of the earth has this power been passive; to it alone we owe all our mineral species; and in collecting & arranging the various atoms of which they are composed, and by which they have become known to us, it has, as a primary cause, given us our plains, our vales, our hills, our mountains, and our continents.

The division of the western area, comprising the third and fourth geological districts of the State, having been made with reference to two important products, salt and coal, and not in accordance with those principles which guide the geologist in commencing and pursuing his investigations, aware how futile the expectation of finding the bituminous coal measures within that area, it was suggested, and cordially met your approbation, that a new division should be made in conformity with all the other interests of the survey.

By the new arrangement which has been formed, the dividing line of the third and fourth districts is nearly north and south, formed by the east boundary of Wayne county, the east border of Cayuga Lake; thence by Ithaca to the dividing line of Chemung and Tioga counties, and by that line to Pennsylvania. The division east of that line will form the third district; and the division west, the fourth district; the former, or third district, is now charged upon us. This division, though of less importance as regards coal, still embraces all the salines, though not the whole of the salt depositions, but should it be deemed important to restore that part of it which is now assigned to the fourth district, no difficulty or inconvenience, I should suppose, can attend that, or any like minor arrangement.

No State in the Union affords such facilities for the examination of its rock masses as New York. The whole range of the western rocks, forming a parallel with Lake Ontario, rising from extensive terraces, the one above the other, with all that simple but imposing grandeur which characterises the broad outlines of nature. From this cause, unique as it is, displaying to the eye and unfolding to the mind upon a giant scale their order of succession, that truly may it be said, that the rocks of New York are the key to the geology of all those co-extensive masses, which terminate only in the far west.

It was over the verge of one of those terraces now traced by the delighted eye from the Lakes to the Hudson, that those streams flowed, which subsequently collecting and uniting into a narrower channel, formed that "thunder of the waters," which no one can see, but feels his insignificance, and the impress of the power of the mightiest of the mighty.

The inconvenience of the former arrangement as regarded facilities for geological investigation was exceedingly great. Ranging as the rocks do from east to west, the sandstone and shales extending beyond the bounds of the fourth district; beginning as we did at Chenango, we saw no other rock throughout that long line of frontier counties, with the few exceptions already mentioned. The great uniformity of the sand stone and shales, though affording ample evidence of their position as regarded the bituminous coal series of Pennsylvania; yet, from the rapid manner of examination, made necessary by the shortness of the season, with the fossils for our principal guide, whose species and order of arrangement in the division of these rocks being unknown, with the exception of those in the counties of Chenango and Broome, no little difficulty attended our reconnoisance. With the change now made, each district, embracing nearly the whole series of the western area—from the limited length of the line of the section at right angles to the direction of the series, every facility is afforded for the removal of whatever difficulty as to superposition may occur.

To conclude—so recent has been the introduction of geological investigations in our country, that no apology is offered for the manner in which we terminate our report. It is well known that a small number of mankind yield to that instinctive propensity which leads to a knowledge of the works of creation, regardless of all practical or ultimate end; whilst the largest portion direct their energies to the attainment of objects of immediate utility. The obvious province is, as the two propensities rarely exist in the same individual, that whatever discovery the former in the progress of his investigations may make, becomes by the applicative habit of the latter, subservient to the well being of all. In this way it is, that man's power, colossal as it is, has been obtained; and though his discoveries have been truly great, yet what is known forms but a limited scale or measure by which to estimate what the future will reveal.

In a report of a reconnoisance of a division of the State, formed with reference to the discovery of a particular fossil product, limited likewise as to time, and embracing so extensive a country, no important result could be expected, unless from the unpublished discoveries of others, or what mere chance might have revealed. Yet who can doubt the ultimate advantage of the survey! believing that "nothing was made in vain," and that all things can be made subservient to the purposes of man. Is it not true, all things else being the same, that amongst the various races and nations of men, those who in proportion to the extent in which they make the earth tributary to them, rise in the scale of humanity? Besides, is not negative knowledge of importance? Do not hundreds seek for coal, where none can exist? and is it not so with tin, antimony, and many other mineral products! A survey is a cheap way of acquiring and imparting knowledge. It makes known for example, what are the rocks which have been created in any given country, for instance our district, and what are the minerals associated with them. Should any discovery that is new and important, elsewhere be made in like rocks, knowing of the discovery, we at once enter with sanguineness upon a search for the same. A knowledge of geology destroys confidence in empirics, a source of evil in the direct ratio of ignorance. When we know, as we do, that the superposition of rocks and the association of minerals are the result of certain laws, we discard all that savors of the mystical.

Many probably may consider, that the subect of geology offers no motive for its study beyond what the mineral wealth of its rocks may unfold; but to those who have pursued it, even in its earlier and then comparatively barren days, its attractions were irresistible. What ought it now to be? since wealth, talent, power, are employed in unfolding its wondrous, nay most marvellous truths. From its interior having been considered as an uniform mass, the earth is not only now regarded as the work of the Lord, but the book, the record of creation, to whose truths more sceptics are to be found, than to the truths of revelation. The layers of which the earth is composed are the leaves of the book, none of which are without instruction; and in their whole we see a display of successive creations, and that too of countless ages, rivalling in wonder, and drawing as much upon our imagination, as do the fictions of the east upon their youthful reader. These successive creations doubtless were preparative to each other, and of the present, the final or Mosaic one—being in this that man for the first time appears; and in his creation, as we have good reason to believe, the successive creations find their ultimate limit.